PURPURA ANGLICANA.

BEING

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A DISCOVERY

OF A

SHELL-FISH.

Cole k.

Found on the Shores of the *Severn*, in which there is a Vein containing a *Juice*, giving the delicate and durable Tincture of the Antient, Rich, *Tyrian PURPLE*; of which it is an undoubted Species: The Knowledg of which, hath been loſt for many Ages.

With Experimental OBSERVATIONS upon it, and Figures of the Shells.

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By *W. Col* the AUTHOR.

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PURPURA ANGLICANA.

THere being many Natural things, which I have formerly, and of late, happily found in the South and West Parts of *England*, not as I can find published by any *Author*; besides many more which have been discovered by the industrious Exquisitions of divers ingenious and curious Searchers of Nature; (as also others which were before thought to be Exotiques;) I have reason to believe, that there are very many more (for incouragement of such Inquirers) yet undiscovered in this our Native Country. Among others, that of the *Purple-Fish*, which I found the last Winter, on the *Sea* Coasts of *Somerset-shire*, and the shores of *South-Wales* opposite to it; which also I doubt not but may be found on the other Coasts of *England*, especially the South and Western parts, (in which I am almost assured I have formerly seen them, tho' then unknown to me,) where there are Rocks and great Pebbles, and where the Tides run not too strong. Which Discovery I do not pretend to be so made by me, as having no hint of it before: For in *October*, 1684, there were two Ladies at *Mynehead*, where I then was, who seeing what Collections I had made of Natural things in those Parts, told me, there was a certain Person living by the Sea-side, in some Port or Creek in *Ireland*, who made considerable gain, by marking with a delicate durable Crimson Colour, fine Linnen of Ladies, Gent. *&c.* sent from many parts of that *Island*, with their Names, or otherwise as they pleased; which, they told me, (as they were informed,) was made by some liquid substance taken out of a *Shell-fish*;

upon which I ſhewed them all the Shells I had found on that Coaſt; one of them thought it to be taken out of a Limpot; the other out of that Shell here figured and deſcribed; but neither of them could inform me out of what part it was taken in either. After their departure from that Port, I made Experiments on all the *Shell-fiſhes*, in which I might probably think to find it; and brake them while the *Fiſhes* were alive in them, and with a ſhort pointed Pencil of Horſe hair (no other inſtrument being ſo convenient) I tryed every part of each, which I imagined might yield the Colour; but upon waſhing the Linnen which I had marked, in ſcalding water, with ſope, there appeared nothing of any colour on them; upon which I was ready to give over any farther ſearch; but at length trying that part, in which I leaſt thought the Tincture lay, it immediatly turned to a light green; which being preſently dryed and waſhed, as before, there appeared that delicate colour they told me of, as aforeſaid.

The whole proceſs, upon my oft repeated Experiments, was as followeth.

Theſe Shells, being harder then moſt of other kinds, are to be broken with a ſmart ſtroak of a hammer, on a plate of Iron, or firm piece of Timber, with their mouth downwards, ſo as not to cruſh the Body of the Fiſh within: The broken pieces being pickt off, there will appear a white Vein, lying tranſverſly in a little furrow or cleft, next to the head of the Fiſh, which muſt be digg'd out with the ſtiff point of the Horſe hair pencil, being made ſhort and tapering; which muſt be ſo formed, by reaſon of the viſcous clammineſs of that white Liquor in the Vein, that ſo by its ſtiffneſs, it may drive in the Matter into the fine Linnen, or white Silk; which, altho' I have not yet tryed it, will (I think) be better then on Linnen, and make the colour appear more bright and vivid by its reflection, ſince which I have tryed it on white Sarſnet, and find it ſo.

The Letters, Figures, or what elſe ſhall be made on the Linnen or Silk (as much forced in, as it can be by the pencil) will pre-

preſently appear of a pleaſant *light green colour*; and if placed in the *Sun*, will change into the following colours, *i. e.* if in Winter, about noon, if in the Summer, an hour or two after Sun riſing, and ſo much before ſetting, for in the heat of the day, in Summer, the colours will come on ſo faſt, that the ſucceſſion of each, will ſcarce be diſtinguiſht; next to the firſt *light green*, it will appear of a *deep green*; and in few minutes change into a full and very fair *Sea green*; after which in a few minutes more, it will alter into a *Watchet blew*; from that, in a little time more, it will be of a *Purpliſh red:* after which, lying about an hour or two, (ſuppoſing the *Sun* ſtill ſhining) it will be of a very *deep Purple red*, beyond which the *Sun* can do no more.

Note, that theſe changes are made faſter or ſlower, according to the degrees of the *Suns* heat.

But then the laſt and moſt beautiful colour, (after waſhing in ſcalding water and ſope) will (the Matter being again put out into the *Sun* or wind to dry) be much a differing colour from all thoſe mention'd, *i. e.* of a fair bright *Crimſon*, or near to the *Princes Colour*; which afterwards, notwithſtanding there is no uſe of any Stiptic to bind the colour, will continue the ſame, if well ordered; as I have found in handkercheifs, that have been waſht more than 40 times; only it will be ſomwhat allayed from what it was after the firſt waſhing. I made large Letters on ſo many cloaths, as there are diſtinct colours, to put them into a Book, which kept them from the *Air*; I have ſeveral months after, ſhewed the various colours diſtinct, as aforeſaid; yet by often opening the Book, and ſo expoſing them to the *Air*, all the colours, excepting the two laſt (I mean before waſhing either) will fade; but all the colours, being waſht, will be one and the ſame. While the Cloath ſo writ upon, lyes in the *Sun*, it will yield a very ſtrong fetid ſmell; (which divers who have ſmelt it could not endure) as if *Garlick* & *Aſſa-fœtida* were mixt together; which I proved but few days before I wrote this, tho' it had been at leaſt twelve months, kept in a Book; which before

it was laid in the *Sun*, had very little of that ſmell. I have farther obſerved, that the cloath dryed and waſht ſoon after it is wrote on, will appear freſher and brighter, then after being kept in a Book; as I found by ſome I newly cauſed to be waſht, after they had been 14 months ſo kept.

The Shells are of divers colours, but the moſt part of them white; ſome are red, when newly taken off the Rocks; ſome yellow; others of both thoſe colours; ſome a blackiſh brown; many a Sandy colour; and ſome few ſtriped with white and brown parallel lines: I have herewith ſent you moſt of the colours, with one of the largeſt I have found, and one of the leaſt, with ſeveral of the middle ſized. *vid. the Figures.* wth ye Operculum.

The firſt linnen Cloaths marked with Letters and Names, I ſent to D^r. *Plot* in *Nov.* 1684, being then one of the *Secretaries* to the *Royal Society* in *London*, to whom he communicating my *Letter* containing my firſt Obſervations, and alſo ſhewing the Linnen ſo markt (at the ſame time) adviſed me that it was ſo acceptable to them, that they were pleaſed to order him to return me their thanks; and that they had appointed ſome Gent. to wait on His late *Majeſty* with them; who (with divers Perſons of Honour to whom they were ſhewn) was much pleaſed with the ſight, and relation of the diſcovery, as new to him. After which I was deſired to ſend up ſome Shells with the Fiſhes alive in them; which could not be done any other way, then by ſending them in ſome Ship bound for *London*, in an open Earthen Pan; renewing the *Sea*-water every day: after which manner I have kept them near a fortnight, and longer I might, had I not made uſe of them; for it ſeems to be a kind of *Amphibious Animal*, alternately living in both Elements every Tide. Being out of their native place, and in want of ſuch Viciſſitudes, they take this courſe to find the *Air*; when any of them are put into a Veſſel of *Sea*-water, (for in freſh they ſoon expire) after they have lain ſome time on the bottom of the Veſſel, they creep up to the ſuperficies of the water, and by extending a kind of Lipp,

with

The Operculum

with their *Operculum's* cling to the ſide of the Veſſel or Pan, (which is moſt convenient for their aſcent,) with about half that part aboue the water, ſometimes creeping down under it, and returning again to their ſtation, between Wind and Water. This I deſigned to accompliſh, and was contriving this way to gratify their deſires; to the end His *Majeſty* the great *Patron* and *Founder* of their *Society*, might have the pleaſing diverſion of ſeeing the Experiment made in His *Royal* Preſence; but a ſtop was put to this deſign by a Calamity, too great and publick to be mentioned.

There are other imperfect obſervations, which I have made of this our *Purple-Fiſh*; which I may in ſome time give you a better account of, *viz.* 1. At what Age of the Moon, and time of the Tides (*i.e.* Spring or Neap) their Veins are fulleſt, and give the beſt Tincture. For I have found a difference, they being ſometimes fuller and whiter, and the juice more viſcid; at other times more flaccid and watery.

2. Whether they are in greater perfection in Summer or Winter; having not, as I expected, received any of them this laſt Summer, to make that Experiment, by reaſon of our Weſtern Troubles in the Duke of *Monmouth's* Invaſion. Such as are inclined to theſe Inquiries, and have more liberty from buſineſs then I have, may make farther improvements of it, in the preparations of it by Urine, Salt, *&c.* mentioned by *Pliny* and other *Authors*. And altho' the Shells are ſmall, yet their abundance on ſome of our Shoars, may yield matter enough, (with the more pains) to dy a quantity of fine Wooll, or Silk, ſo as to render the diſcovery ſome way uſeful, and to anſwer the vulgar objection of *cui bono*, made by ſuch perſons, who own no good but what relates to the Body. I am of opinion there may be found on our marine Coaſts, ſome bigger Shells, which may have a colouring juice, though not the ſame with this, for that I know few Natural things both of Animals and Vegitables, but what have divers Species of the ſame kind, ſometimes in the

ſame place. This may be a ſufficient intimation to all Ingenious perſons living near the *Sea*, to imploy ſome time to find this out.

My purpoſe was, with this diſcourſe to have drawn and ſent you Figures of theſe Shells, with the Fiſh pulled out and extended beyond the Vein, together with their *Operculums*; to which end I ſent lately for ſome of them, but they being not yet come (to ſatisfy the deſires of ſome Gent. of the *Society*) I have ſent it now, (in that particular) not ſo perfect as I could wiſh. As for the qualities of this Fiſh, I can yet ſay but little, only I was aſſured, by ſome who had boyled, dreſt, and eaten of them, that they are wholſome food; as good at leaſt, and taſt as well as Lympots or Winkles, only the fleſh ſomething harder.

For what Uſe Nature hath deſigned this Vein of colouring juice unto the *Animal*, will be difficult to find out; perhaps it may be the ſpermatick and prolifick Matter, by which they propagate their kind; which I am inclinable to think, from its conſiſtence, virulent and fœtid ſavour. A Microſcope (which I had not then by me) might have given ſome light in this Matter, and confirmed it, if thoſe *Animalcula* are to be found in it, which are in the Maſculine Sperm of Fiſh, and other living Creatures (as ſome affirm from the many late Experiments they have made.) Or elſe it may be a Humor in this *Animal*, which by its Vital Energie, as the ſpring of life and motion, ſupplies the want of heart, liver, blood, *&c.* as in other exanguinious *Animals*. Thoſe who ſeek after them may find, as I have done, ſome of thoſe *Purple* Shells, in which are the *Cancelli*, or rather *Aſtaci*, (unto which they are more like,) and ſo may miſtake; for thoſe little Craw-fiſhes, I have found in moſt of our *Engliſh* Shells, excepting the *bivalved*, and *Patella's*; of which in many parts, eſpecially in the *Weſt-Indies*, there are many ſorts, and ſome very large; which our Country-men there call *Soldiers*; for that they ſay, they enter by force, kill, and take poſſeſſion of thoſe Houſes they have not built; and when they

grow too big, forsake them and enter into larger: Whether that be true I know not: This I have found, when I have broken some of the Shells in which those Vagrants are, so as not to bruise their Bodies, and then put them naked into the water, I have beheld them with nimble springing Motion, to run to and fro, till they find a Stone to hide themselves under; which not finding, they bury themselves in loose sand: and this observation gave me full satisfaction, that they were not (at least all the kinds) connate and coalescent with their Shells, as other testaceous *Animals* of the *Sea* and *Land* are; but this being besides my purpose, I return to the *Purpura*.

There is no doubt, but that it is a Species of that kind; of which there are many sorts, differing in bigness, structure, colour of the Shell, according to the nature of the *Sea*-Grounds, depth or shallowness of water, Rocks, Gravel, Mud, as also the Latitude where they are found; and so differing also in the varieties of colours of the tinging juice in their Veins, as black, livid, violaceous, deep Sea-green, light and deep red, Amethystine, *&c.* As the Histories of this *Animal* doe mention. But the best of all were found in the *Tyrian Seas*, near that *Island*, on which the renowned City of *Tyre* was built, now an inconsiderable Town called *Sur*; this was celebrated, and prised above all the rest, for that it excelled them all in its illustrious colour, called in former Ages by divers Names, as *Ostrum Sarranum*, *Pelagium*, *Venenum Tyrium*, *Purpurissum*, *Flores Tyriani*, &c. Almost all *Authors* agree, that it lyes in a certain Vein in the Fish, and some of them mention it to be white and viscous, as this of ours is. It were to little purpose to give the History at large of all the *Purpuræ*; and when and how first discovered to *Phœnix* the Son of *Agenor*, the second King of the *Phœnicians*, by means of a Shepheards Dog devouring one of the Fishes, and colouring his lips with that excellent dye: By which its Antiquity appears. In succeeding Ages it received improvements, to the

time

time of *Pliny*, in whose days (being in the Reign of the *Vespasians*) it seems to have arrived at its highest perfection; of which he hath made more particular Observations than I can find in other *Authors*; for which he had great opportunity, living in the Imperial City of the World, where the Artists in Preparations of that Tinging *Succus*, for dying the Robes and other Vestments of the Emperors, Senators &c. strove to excell each other in new fashioned Purples for their own gain, and [illegible] to gratify the luxuriant excess of the Great Ones of those times, by preparing and mixing the colour (found in the several sorts of Shells, as aforesaid.) This colour sold then at great Prises; that which was fine double dyed Purple of *Tyre*, called *Dibapha*, yielded 1000 *Roman Denarii* the pound, which is computed to be more than Thirty Pounds *Sterling:* and this of ours being so excellent a colour, without other preparation or addition of any thing to it, may now, or at least hereafter (by farther improvement) vye with the *Tyrian Purple*. *Johnston* out of *Aristotle*, mentions a Species of these *Fishes*, under the Name of *Littorales quæ parvæ & flore sunt rubro*; this agrees with ours, which may be named *Purpura littoralis* (*sive* Teniensis) *parva turbinata*.

Since the importunity of some Friends hastned this Discourse sooner than I intended (and so prevented those farther Experiments, which I might have made this next Summer) presuming on your favourable acceptance, and excusing the imperfections of it, which could not be so well digested (in the Method of it) as it might have been, were I not ingaged in a publick Imployment, which requires my dayly Attendance; I have therefore now presented you with it as it is: And if I find it grateful to you, and to such others, as shall happen to read it, I shall be incouraged to impart many other things, which I esteem no less considerable than this; to the end that the stupendious Works of Nature, or rather of the God of Nature (in which are clearly seen his infinite Wisdom, Power, and Goodness)

neſs) may by us, as his Inſtruments, be celebrated for his Glory: In whoſe Service I am one of the leaſt of your [illegible] *Society*.

WILLIAM COLE.